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## Supported Operating Systems

Chromeleon 7

Chromatography Data System

Software Version 7.3.2 • April 2023

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## 1 Introduction

This document lists the operating systems supported for use with Chromeleon 7.3.2 and the role within Chromeleon for which each operating system can be used.

**Note:** Changes to this document since the previous release of Chromeleon 7 are highlighted in yellow.

## 2 Support Details

### 2.1 General

Chromeleon 7.3.2 is a Feature Release (FR) of Chromeleon.

#### 2.1.1 Operating System support

In general Feature Releases are supported on the current version(s) of Windows Desktop, Windows Server, and Citrix available at the beginning of the validation phase of the Chromeleon project.

#### 2.1.2 Database support

In general Feature Releases are supported for use with the latest version, and the most recent update of the previous version, of Microsoft SQL and Oracle databases available at the beginning of the validation phase of the Chromeleon project.

#### 2.1.3 Operating system and database releases after Chromeleon release

After a Chromeleon Feature Release, we continue to monitor new Windows (including Windows KBs) and Database releases. If new versions of Windows, SQL or Oracle are released between Chromeleon Feature Releases, then we will normally aim to test Chromeleon compatibility with those versions within a 6-month period and make an updated announcement about Chromeleon support on those platforms. However, if a subsequent Chromeleon Feature Release (FR+1) is released within that 6-month period, then the new Windows, SQL or Oracle versions will be tested and supported on the subsequent release only.

## 2.2 Supported Operating Systems Per Role

The following table lists the operating systems supported for each role in Chromeleon.

For Enterprise Chromeleon systems, any supported Client operating system(s) can be used in combination with any supported Server operating system(s).

| Role                                   | Supported Operating Systems  |  |
|--|--|--|
| Standalone Workstation                 | Microsoft Windows 11 Pro and Enterprise (64-bit) <sup>[4]</sup><br>Microsoft Windows 10 Pro and Enterprise (64-bit) <sup>[4]</sup>   |  |
| Remote Client / Data Processing Client | Microsoft Windows 11 Pro and Enterprise (64-bit) <sup>[4]</sup><br>Microsoft Windows 10 Pro and Enterprise (64-bit) <sup>[4]</sup>   |  |
| Thin Client                            | Microsoft Windows Server 2022 with Terminal Services activated <sup>[1]</sup><br>Microsoft Windows Server 2019 with Terminal Services activated <sup>[1]</sup><br>Microsoft Windows Server 2019 with Terminal Services activated running Citrix XenApp 7.15 <sup>[1]</sup><br>Microsoft Windows Server 2016 with Terminal Services activated <sup>[1]</sup><br>Microsoft Windows Server 2016 with Terminal Services activated running Citrix XenApp Server 7.15 <sup>[1]</sup> |  |
| IPC / Enterprise Workstation           | Microsoft Windows 11 Pro and Enterprise (64-bit) <sup>[4]</sup><br>Microsoft Windows 10 Pro and Enterprise (64-bit) <sup>[4]</sup>   |  |
| 247 Instrument Controller              | Windows 10 LTSC 1809 firmware version TDS5.50 (TDS5) <sup>[4]</sup>  |  |
| Chromeleon Domain Controller           | Microsoft Windows Server 2022 <sup>[1]</sup><br>Microsoft Windows Server 2019 <sup>[1]</sup><br>Microsoft Windows Server 2016 <sup>[1]</sup>   |  |
| Data Vault Server (Master or Slave)    | Microsoft Windows Server 2022 <sup>[1]</sup><br>Microsoft Windows Server 2019 <sup>[1]</sup><br>Microsoft Windows Server 2016 <sup>[1]</sup>   |  |
| Database Server <sup>[2] [10]</sup>    | Oracle 18c <sup>[8]</sup><br>Oracle 19c <sup>[8]</sup>   | Microsoft SQL Server 2017<br>Microsoft SQL Server 2019<br>Microsoft SQL Server 2022  |
| Local database                         | Oracle not supported for local data vault  | Microsoft SQL Server 2014 Express SP3 <sup>[5]</sup><br>Microsoft SQL Server 2016 Express<br>Microsoft SQL Server 2017 Express<br>Microsoft SQL Server 2019 Express<br>Microsoft SQL Server 2022 Express |
| Raw Data Server                        | Microsoft Windows Server 2022 <sup>[1]</sup><br>Microsoft Windows Server 2019 <sup>[1]</sup>   |  |

|                               |   |
|-------------------------------|---|
|                               | Microsoft Windows Server 2016 <sup>[1]</sup>  |
| .Net Framework <sup>[7]</sup> | Microsoft .NET Framework 3.5 SP1<br>Microsoft .NET Framework 4.6.2<br>Microsoft .NET Framework 4.7<br>Microsoft .NET Framework 4.8  |
| Virtualisation                | Virtualization is supported for the following roles <sup>[3]</sup> : <ul style="list-style-type: none"> <li>• Chromeleon Domain Controller</li> <li>• Chromeleon Data Vault Server (load-balanced)</li> <li>• Database Server (Oracle and SQL)</li> <li>• Chromeleon Raw Data Server</li> <li>• Thin Client / Remote Client / Data Processing Client</li> </ul> |
| Cloud deployment              | Cloud deployment is supported for the following roles <sup>[6]</sup> : <ul style="list-style-type: none"> <li>• Chromeleon Domain Controller</li> <li>• Chromeleon Data Vault Server (load-balanced)</li> <li>• Database Server (Oracle and SQL)</li> <li>• Chromeleon Raw Data Server</li> <li>• Thin Client</li> </ul>  |

## Notes:

[1] Windows Server 2022, 2019 and 2016 are supported on both the Standard and Datacenter editions.

[2] If the database is installed on the same machine as the Chromeleon Domain Controller or the Chromeleon Data Vault Server (neither of these configurations are recommended as they cause a potential single-point-of-failure in the Chromeleon system), the database version must be compatible with the Server operating system. Refer to the documentation for your chosen database for more information

[3] Thermo Fisher Scientific has tested Chromeleon on a range of virtualization hypervisors. Our findings are that, provided the hypervisor is capable of hosting a virtual machine running one of the Windows versions listed in the table above, it is capable of being used in a Chromeleon system in any of the roles listed in the Virtualization section of the table above. Virtualization is not supported for Workstation or IPC roles as a physical connection to an instrument is required and reliable 'virtualised' instrument connection mechanisms are not fully compatible with real-time operations and usage of multiple communication ports.

[4] See section 2.2 for further information regarding Windows 10 support

[5] SQL Server Express 2014 SP3 is only supported on Workstation and IPC computers which have previously had Chromeleon 7.2 installed. When Chromeleon 7.3.2 is installed onto a computer which did not previously have Chromeleon 7.2 installed, SQL Server Express 2022 will be installed. Extended Support for SQL Server Express 2014 SP3 runs until July 2024. Support in Chromeleon therefore only applies to customers who have purchased a SQL Server Express 2014 SP3 extended support from Microsoft.

[6] Chromeleon has been tested by Thermo Fisher Scientific on Amazon Web Services (AWS) Elastic Cloud Compute (EC2) instances of Windows 2016 Server and Windows 2019 Server. Any other cloud platform which supports the creation of a Windows Server VM running one of the Windows versions listed in the table above is supported for use in a Chromeleon system in any of the roles listed in the Cloud deployment section above. Cloud deployment is not supported for Workstation or IPC roles as a physical connection to an instrument is required and reliable 'virtualised' instrument control connection mechanisms are not fully compatible with real-time operations and usage of multiple connection ports.

[7] The .net framework versions listed in this table are the *minimum* versions required for use with Chromeleon. Each version of Microsoft Windows comes with a version of .net framework already installed. Newer version of Windows will have version(s) of .net which are later than the versions listed in the table. In order to use Chromeleon, you must also ensure that the *minimum* versions of .net listed in the table are installed in addition to any pre-installed versions.

[8] Installation of the Oracle 18c and 19c clients require special instructions. These can be found in the document #460 of the Chromeleon Enterprise documents

[9] Mainstream Microsoft support for Windows 2012 Server R2 ended in 2018. Extended support runs until October 2023. Given the short timeline between the release of Chromeleon version 7.3.2 and the end of Extended support for Windows 2012 Server R2, this version of the Windows server has not been tested and therefore will not be supported from Chromeleon version 7.3.2 onwards.



## 2.3 Windows and Database Security Updates

This Chromeleon release has been validated for use with the operating systems and databases listed in the previous sections above. Security updates to Windows and other system components are not formally validated.

For optimum security, the installation of the latest Windows and database security updates is generally recommended.

However, security updates are not formally validated against already released versions of Chromeleon, so the possibility of a conflict between Chromeleon releases and these updates cannot be excluded. Therefore, installation and testing of security updates is the responsibility of the respective installation site.

In the event of a compatibility issue when testing a security update, contact your local Thermo Fisher Scientific representative for support. Reasonable efforts to solve such problems will be made, but compatibility with every security update cannot be guaranteed.

## 2.4 Windows Feature Updates

Beginning with Windows 10, version 21H2 (Windows 10 November 2021 update), feature updates will be released annually in the second half of the year via the General Availability Channel. Microsoft will continue to support at least one Windows 10 release until October 14, 2025. For details on the feature releases of Windows currently in support by Microsoft, please refer to the Microsoft website.

Thermo Fisher conducts its testing of a Chromeleon CDS release against the latest available feature release of Windows 10 and Windows 11 available at the time of release. We do not formally test against all previous feature releases. As with security updates (see section 2.3), the possibility of a conflict between Chromeleon releases and these Windows feature releases cannot be excluded. Therefore, installation and testing of these Windows feature releases is the responsibility of the respective installation site.

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